THE PSYCHIATRIC FEATURES OF SO-CALLED LETHARGIC ENCEPHALITIS

CASE REPORTS AND A REVIEW OF THE LITERATURE

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Probably no single topic in the field of nervous and mental diseases has, within the past year, received more attention than so-called lethargic encephalitis, and yet the vast literature on the subject contains little concerning the psychiatric aspect of this disorder besides that given in a few papers noted later under a discsussion of the literature.

We came in direct or indirect contact with about fifty or more cases of this disorder during the winter and spring of 1920. With the exception of the four cases reported in this paper, especial attention was not given to the mental picture except in regard to the condition called "substupor" that was so pronounced in most of the cases. The physicians who had charge of most of the patients were more particularly interested in cranial nerve palsies, lost knee jerks, spasmodic muscular twitchings, bladder disturbances, nystagmus and a host of other neuropathologic findings. We present this subject because we studied the mental conditions of our patients and because three, if not all, of our cases occurred in persons who had, before their infection, exhibited more or less pronounced neurotic tendencies. One had been under observation for some time to determine whether he was suffering from so-called petit mal epilepsy or from anxiety attacks of hysteria. Another had an antecedent history of obsessions; a third was a highly unstable and emotional child, and the fourth was of distinctly high strung temperament. This raises the question, perhaps of a will-o'-the-wisp character, as to whether the neurotic tendencies predisposed the patient to an attack of encephalitis or whether the attack threw into bold relief the psychiatric picture in the case.

REPORT OF CASES

CASE 1.—*History.*—B. B., a white boy, aged 9; whose maternal grandmother died at the age of 53 of a "nervous skin eruption" and whose paternal grandfather died of apoplexy at the age of 69, had been a patient at Pontiac State Hospital for some time. His mother, aged 29, was emotionally unstable. The father was apparently normal, a successful salesman. He was suing the patient's mother for divorce on the ground that her youngest child (10 weeks old at the time the patient was first seen) was not his. The mother was bringing counter charges of infidelity.

Gestation and birth were negative. He had had measles, mumps and whooping cough after beginning school. During the past three or four years he had always become fatigued easily on exertion, and on several occasions had had episodes of sleeping for two or three days following exertion.

Make-Up of the Patient.—He was easily controlled and of a happy disposition, with the exception of frequent spells of emotional instability not unlike those of the mother. He was fond of boyish sports. His mentality was above the average; this was confirmed by intellectual tests.

Present Illness.—He contracted what was diagnosed by the family physician as influenza in February, 1920. His temperature was elevated for eleven days. Recovery was good except for "lameness" in the right leg and knee. This condition was intermittent. He had been out of school twenty-three half days. He returned to school about March 8, doing well until April 14, 1920, when his teacher noticed that he was slow in arithmetic, and that his handwriting was tremulous to the point of being illegible. At this time the mother noticed that he continually tossed about in bed with movements not unlike those of acute chorea. Intention tremor was noticed especially when he tried to eat or drink. He had to be fed for this reason. He was unable to button his clothes. His speech was thick. He had progressive emotional instability.

Examination.—The patient was first seen April 19, 1920. His face was flushed. The temperature was 100.5 F.; pulse rate, 108. Blood pressure was systolic 95, diastolic 58. The heart beat was irregular and pounding, but no murmurs were detected. Neurologic examination showed wide choreiform movements of all four extremities. The throat was difficult to examine because the head was in constant motion. Knee reflexes were not obtained. The chief mental symptom was emotional instability.

Clinical Course.—April 20, lumbar puncture showed a clear fluid, twenty-one cells, negative globulin and a flat gold curve. There was moderate leukocytosis and 13,500 white cells were found. Blood culture was negative. There was a cell count of twenty-three, and of nineteen on the occasion of two later spinal punctures made within the following week. After that the spinal fluid was negative on two occasions and within two weeks the blood count was normal, and all neurologic symptoms had disappeared, except choreiform movements of the hands, and the absence of knee reflexes. These in turn disappeared within a month after the patient was first seen.

Mental Picture.—The outstanding feature, both before and after the patient came under the writers' observation, was marked emotional instability. There never was a period or stage that could be designated as the lethargic or substuporous stage. On the third day after he was examined there was a short period of unclearness or mental confusion. After one of his evening meals he appeared half delirious, getting out of bed, and then trying to get in again. He appeared to realize that he had defecated in the bed, but seemed to have lost the power of speech, only pointing to the soiled linen. When power of speech returned there seemed to be a transient aphasia, or paraphasia. For this episode he later had no memory. He was discharged as recovered, six weeks after he was first seen. At present he shows no evidence of his illness except a slight emotional instability.

Had it not been for the spinal fluid findings, the leukocytosis, and the temporary loss of the patellar reflexes, the case would have been regarded as one of Sydenham's chorea.

The outstanding mental symptoms were: emotional instability, inability to perform simple arithmetical calculations, and a brief period of unclearness with amnesia for the same on recovery. There was no evidence of mental deterioration or defect as a result of the illness. It should not be forgotten that the patient was emotionally unstable during a state of physical health, and that there was a taint in the family history.

CASE 2.—*History.*—A. M., a young man aged 28, single, white, a machinist, had a negative family history. The previous medical history was unimportant.

Make-Up of the Patient.—He was somewhat high strung. He always worked as though under tension, frequently late into the night with his books, even after long hours in the factory as an automobile mechanic. He frequently talked of inventions and machinery. He was fairly sociable in his habits; somewhat sentimental.

Present Illness.—On Tuesday, April 13, 1920, the patient began to be troubled with terrifying dreams, such as concerning a bear getting under his bed, and creeping up the bed after him. He complained of general malaise, but felt the necessity of keeping at his work. He obtained little or no sleep for the next four nights. He had anorexia, and was troubled with nausea and vomiting on the way to, or at, work.

Absentmindedness was noticed by his landlady. He would start to work without his door-key, papers, pencils, etc. On Tuesday, April 15, he started to work in the rain without his umbrella. He returned to the back stairway for his rubbers when they were in the front hallway. Choreiform movements began that night. He had subjective sensation of teeth falling out, relieved only by biting the hot-water bottle.

For the week preceding these symptoms the patient had been troubled with sore throat. Friday, April 16, frequent yawning and stretching movements, difficulty in breathing and ambling gait were noticed. That night generalized threshing or tossing movements of entire body were present. The family physician was called. The movements were not affected by morphin, ¾ grain, or veronal, 30 grains, in twenty-four hours.

Examination.—The patient was first seen on Sunday, April 18, at noon. His face was flushed, and he was tossing violently about in bed, his movements being not unlike those of one having a severe hysterical attack. He would throw himself in the air, the rebound almost severing the springs from the bed. He answered questions, however, and said he suffered no pain. He kept his eyes closed most of the time. He could be quieted by laying a hand on his trunk or extremities.

Neurologic examination disclosed nothing unusual. Pupillary responses, and extra-ocular movements were normal. There was no nystagmus. Knee reflexes were normal, as were the other deep tendon reflexes. The superficial reflexes were unimpaired. Blood pressure was normal. The temperature was 99 F. He was admitted to Harper Hospital on April 18, 1920. For the next two days threshing movements continued, at times almost becoming opisthotonos. At all times he responded rationally to questions.

On the third day the knee reflexes were questionably absent and the abdominal reflexes were not obtained. There was a bilateral weakness of the sixth nerve, more pronounced on the left. Morphin had no effect on the spasmodic movements. Apomorphin did not cause vomiting, but did have a quieting effect. The laboratory findings were:

1. Spinal fluid: negative Wassermann reaction; cell count, 140; decided increase in pressure; crystal clear fluid; globulin, positive; mastoid and gold curves negative.

2. Blood: negative Wassermann reaction; blood nitrogen, 29 mg. per 100 c.c.; blood count: red, cells, 4,650,000; white cells, 9,000; differential count, negative; red cells, normal in size and staining reaction; hemoglobin, 80 per cent.

3. Urine: negative.

On the first day of admission to the hospital, the temperature rose to 102 F., and gradually fell to normal by the fourth day.

Mental Picture.—He had terrifying dreams and was unable to concentrate. He responded well to questions. On the day of his admission to the hospital, insight was poor, the patient regarding himself as well. As proof he stated that he was no longer troubled with certain numbers running constantly through his mind, such as "16 Z 1185," a number on a machine part which he had been making, or "167753," the engine number of his automobile. "If I had nothing to read, I would keep repeating these numbers. I was sick then; I am well now." On April 20, the patient stated that he had a total amnesia for a period of four days from April 16 to 19 inclusive, and he did not remember his terrifying dreams, the visits of his physicians, or his admission to the hospital. During the period of his amnesia he frequently manipulated his genitals, even when the nurse was in the room. Of this he also had no memory, but he thought he had had a diplopia for a few minutes on the night of the 16th when he was first taken acutely ill.

Clinical Course.—After the fourth day in the hospital, improvement, both mentally and physically, was rapid. For a week there was a period of mild drowsiness from which he could be easily aroused. He was discharged one month after admission. At that time the chief residual of his illness was a slight blurring of vision. He could not read for over twenty minutes without fatigue. There was still a noticeable weakness of the external recti and a slight arrhythmia of the heart. Three months after his discharge from the hospital, he was able to return to work, and the only residual of his previous illness was a drowsiness which usually appeared about 9 o'clock in the morning while he was at work. "Even a few seconds of dozing" would make him "good for the rest of the day."

The principal mental symptoms in this case are:

1. Terrifying dreams.

2. Absent-mindedness and diminished power of concentration.

3. Delirium of a mild character with complete amnesia for the period of delirium. This period was marked by spasmodic twitchings and generalized movements, manipulation of the genital organs, mild degree of euphoria and lack of insight.

4. Short periods of substupor immediately following the irritative stage. This substuporous condition was not marked. He answered questions readily, but usually dropped off into a half drowsy state after the questions were answered. This period continued for about a week. At no time was it difficult to get his attention.

5. Three months after his discharge from the hospital there were brief moments of this drowsy tendency, occurring usually in the morning.

CASE 3.—*History.*[1]—S. O., a single man aged 23, a Russian Jew, had a negative family history, except for the fact that he and many of his brothers and sisters, nine in number, suffered from enuresis, several as late as the sixteenth year. He came to this country from Russia at the age of 15. He had received a high school education. For several years he had assisted an older brother in the mercantile business, and for three years he had managed a small store himself.

About 1915, the patient began to have attacks, or "spells," of an epileptiform or hysteroid character. They would usually come on in the morning just after he had arisen, and would last not longer than a minute. There were aura, particularly peculiar sensations and paresthesias in the right arm. He never fell, but was able to get to a chair or bed. He would then become tense and rigid and appeared to lose consciousness for a short interval. He was admitted to the State Psychopathic Hospital at Ann Arbor, for observation, on Nov. 19, 1917, and was discharged December 11 of the same year.

Physical examination was practically negative. Neurologic examination showed a myopic fundus with a congenital choroidal lesion in the left eye. There was questionable horizontal nystagmus. There was a slight facial asymmetry. During the examination, muscles of the thighs and calves showed twitching and both limbs exhibited tremors. Patellar and Achilles' reflexes were active.

Laboratory findings, including the blood Wassermann reaction, were negative.

During his residence at Ann Arbor the patient had about four mild convulsive seizures. All occurred during the night and left no bad after-effects. On Dec. 8, 1917, he had several seizures of mild character with momentary confusion, accompanied by slight general muscular twitchings. His case was diagnosed as epilepsy, nocturnal petit mal attacks.

Make-Up of the Patient.—He was quick-tempered, but sociable and popular with his associates. For two years his habits were somewhat irregular and a source of concern to his family. He denied venereal infection.

Present Illness.—On Dec. 31, 1919, the writer was called in consultation. It was learned that his so-called petit mal attacks had gradually lessened in frequency after his discharge from Ann Arbor, and that for three months prior to December 31, these attacks had disappeared entirely. Even before that time an attack could be aborted by awakening him during the night or by simply turning on the electric lights in his room.

On or about Dec. 17, 1919, the patient had caught cold following the opening of some new stores. He appeared to recover, but had a slight relapse, and was confined to bed a day or two about December 22. On Christmas day he began to suffer what was described as "neuritis" affecting one part of the body, then another, but never the joints. He was sent to Mount Clemens for the baths, but while there he grew steadily worse, the chief symptom being severe spasmodic twitchings of the muscles of the trunk, which the brother thought might be "hysterical."

On Jan. 21, 1920, he was admitted to Harper Hospital in the Neurological Service.

On the day of admission the neurologic examination was negative, except for irregular jerking movements of the abdominal muscles.

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[1] History of this case from Nov. 19, 1917, to Dec. 11, 1917, was obtained by courtesy of Dr. Albert M. Barrett, Director of State Psychopathic Hospital, Ann Arbor, Mich. S. P. H. No. 2191.

Mentally he appeared to be in a dream state or a mild delirium. He constantly kept his eyes closed and emitted grunting noises not unlike those of an animal. He was restless, and continually picked at the bed clothes; at other times he would cover his head with the bedspread not unlike a manic or praecox patient. He would frequently ask for the urinal, get out of bed in a half-dazed way, stand as if puzzled, and would not urinate. When asked where he was suffering pain, he would answer, "Six dollars." Three tenths of a grain of apomorphin was given with no apparent effect.

On January 2, he was disoriented for time, person and place. One physician was a "policeman," and the other a "mail collector."

The neurologic examination was still negative on January 2, but lumbar puncture gave a positive globulin test and 90 cells in the fluid. Other important laboratory findings, January 7, were:

1. Urine, negative.
2. Blood count: red cells, 4,900,000; white cells, 14,800.
3. Blood Wassermann, blood culture and blood nitrogen, all negative.
4. Spinal fluid Wassermann and culture negative.
5. Lange and Mastic curves negative.

From that time on the patient's symptoms became more grave. His temperature began to rise, reaching as high as 104 F. The spasmodic contractions of the abdominal muscles continued; the right pupil became sluggish; the tendon reflexes, especially the patellars were somewhat delayed; there was a noticeable intention tremor, and speech became somewhat thick. Cardiovascular and respiratory symptoms appeared, and it became necessary by January 10 to inject normal salt solution intravenously. For several days before this the "substuporous" mental state appeared, or perhaps what might better still be called a "low grade stupor," from which the patient could always be aroused sufficiently to answer questions, though his mentality was as a rule unclear. This stupor was more marked in the morning.

On January 5, the patient's spinal fluid agglutinated the blood of five or six other similar cases then in the hospital, and this was regarded as a favorable symptom. Nevertheless he steadily grew worse. His condition became so bad that two blood transfusions were done, the donors being his brothers. In spite of this he died in a state of coma on January 26, twenty-six days after admission. Unfortunately, necropsy was refused by the family.

It should be added that during the last two weeks of his illness bladder symptoms appeared, the urine being literally ejaculated frequently the full length of the bed.

Mental Picture.—The principal mental features in this case are:

1. Several siblings with enuresis up to as late as the sixteenth year.
2. The patient was subject to petit mal attacks of nocturnal epilepsy for three or four years before his encephalitic condition. These attacks could be aborted by simple measures.
3. Early in his acute illness he appeared to be in a dream state or delirium. He kept his eyes closed and grunted like an animal. At that time his temperature was normal, and this without the cerebrospinal fluid findings, at first suggested an hysterical state. He later became distinctly unclear and disoriented. All these irritative symptoms preceded the lethargic state.
4. The substupor or lethargy did not appear until the neurologic signs became marked, more particularly eye signs, diminished knee reflexes and bladder symptoms. From this low grade stupor he could be aroused up to the last day or two, when the terminal coma set in.

Case 4.—*History.*—H. H., a white man, a Russian Jew, aged 34, married, a sign painter, whose history was unknown to the wife, was negative according to the patient. He was born and educated in Russia. He had been in this country ten years, and spoke English unusually well. His best wage was forty dollars a month. His previous medical history was unimportant except for appendectomy about June, 1918, and influenza in the winter of 1918-1919.

Make-Up of the Patient.—He was married in August, 1919. He had neurotic tendencies before and after marriage. He was known to his wife only three months before marriage. Then and shortly after he expressed ideas of impotency; he was frequently unable to accomplish orgasm. Several months before his present illness he saw several physicians in regard to this condition.

Present Illness.—The patient was first seen on Feb. 10, 1920. For a few weeks before he had complained of so-called "neuritis," with pains at the back of the neck, and at the outer aspect of the right arm. Repeated examinations revealed nothing important, except an enlarged turbinate; ethmoidectomy was performed and later the sphenopalatine ganglion was injected with alcohol; following this the patient seemed to improve for a short time, but his former symptoms returned, and when first seen he complained of various pains localized in the right shoulder, the right mastoid region, at the vertex of the cranium and in other places. He described the pain as being sharp and like that of a hammer beating him every few minutes.

Examination.—Feb. 10, 1920: A neurologic examination from an organic point of view appeared to be entirely negative, except for an exaggeration of all the deep tendon reflexes. There was a marked glove and upper arm analgesia and anesthesia. This was less marked in the lower extremities. Hemihyperalgesia of the right face, arm and trunk appeared at a later interval. The cranial nerves were normal.. Vibratory and muscle tendon sense and electrical reactions were normal.

Mental Picture.—The patient was groaning and talking in a whispered voice. On being questioned, he said he did not realize that he was whispering. When his attention was distracted all evidence of pain seemed to disappear. On compression of the eyeballs, the patient said he saw various colors, flowers, trees, "now a castle, now a lighthouse with the sun as though it were going down."

On February 14 and 15 his condition was unchanged. He was put under hypnosis. During the second hypnotic state he described a journey through Arabia. He stoutly denied all memory of falling to sleep. During the waking state he talked spontaneously about his sexual impotence, and showed lack of insight when he could not be convinced that he could have a child (his wife was then pregnant) and still be impotent. From February 10 to 15 his temperature was usually normal, occasionally being slightly subnormal, and on one occasion it was 99 F.

Apomorphin had only a slight effect in doses of 1/10 grain three times daily. This was directed to jerking movements of the abdomen which seemed to be within the patient's control on and after February 13. On the 16th his temperature began to rise gradually. A spinal puncture was performed with the following results: cell count, 20; colloidal gold, curve flat; globulin, negative, and Wassermann reaction negative. On the same day he began to develop visual and kinesthetic hallucinations. He thought his bed was wired with electricity and imagined that chickens were being hatched under his arm pits and under his pillow. He also developed suspicious tendencies against a brother who was summoned from New York.

On February 20, Dr. Albert M. Barrett and Dr. Carl D. Camp were called in consultation from Ann Arbor. At that time both knee reflexes were doubtfully obtained, there was a noticeable horizontal nystagmus, a slight ptosis of both lids and a distinct bilateral weakness of the sixth nerve. The nurse reported that he was constantly masturbating or manipulating the genitalia. The nurse also reported that the patient rehearsed in detail to his brother all that was said at his bedside by the physicians.

His case was looked on as one of so-called lethargic encephalitis.

Later Clinical Course.—Feb. 20, 1920, nasal examination was practically negative, except that there was a slight erosion of the anterior portion of the septum with dried bloody secretion. There was a slight deflection of the septum; the left nasal cavity was not obstructed. The blood count revealed 13,600 white cells. The temperature remained constantly elevated, ranging from 99 to 102 F., but averaging about 100 until April 20, when it became slightly subnormal and remained so for a week. It then returned to normal and remained so until the time of his discharge, May 23, 1920.

The jerking movements of the abdominal muscles persisted until about March 15, when they gradually began to lessen in intensity though they never disappeared entirely. At no time were there any bladder symptoms.

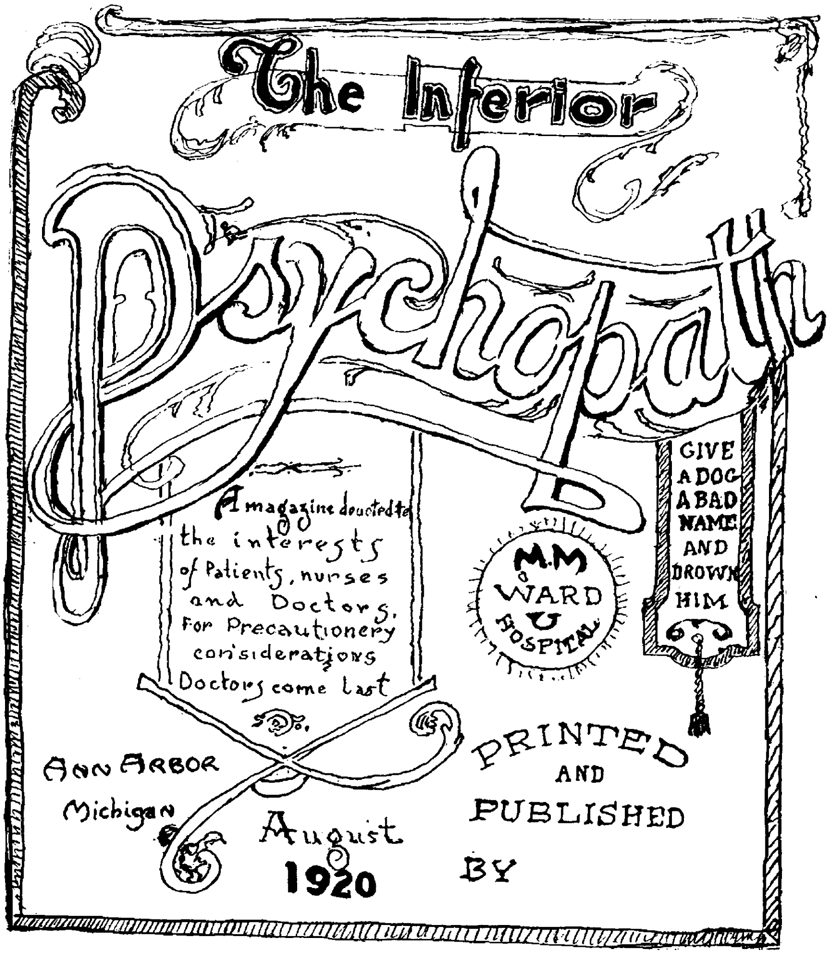
Mental Picture.—For a short time after admission to Harper Hospital, Feb. 16, 1920, the condition was much the same as that described above: He was restless, picked at the bed clothes, had hallucinations, was disoriented and at times incoherent. This condition gradually disappeared until about March 1, when a substuporous or so-called lethargic state appeared and continued for about a week. He could, however, at all times be aroused sufficiently to answer questions.

On or about the middle of April, two months after the acute onset, the patient began to have insight into his condition, but there was a distinct amnesia for the period of irritation or delirum and for the period of substupor. On April 18, he wrote to Dr. Mc.: "Having emerged from the world of shadows—a world all of its own, with its own laws, where the glimpses of reality that penetrate the mind serve only as material to draw the most weird pictures, and being now on the road to recovery, I take this opportunity to thank you . . . for calling on me at the hospital . . . although I don't remember it . . . people tell me about it . . . and last, but not least, I thank you for giving me Dr. J.—to whom I have so much to be thankful for."

The period of amnesia dated back to the time of the first lumbar puncture before his admission to Harper Hospital.

Though insight had returned, and the patient's mind was clear, he continued to show marked psychoneurotic tendencies. He seemed to delight in localizing the areas in which he stated he still had pain. He would point to one knee and say "I have pain here; but that is not all. My pain must be symmetrical, and so I have pain here," pointing to the same spot on the opposite knee. He would do this for almost all portions of the body. He would frequently speculate and dilate on his experiences and symptoms during his illness, making it appear at times that his amnesia was not complete. Whenever any mention was made about its being almost time for his discharge from the hospital, he would become querulant and complaining. He was seen once or twice in the outpatient department after his discharge, and on each occasion showed a lack of initiative, dilated on his various bodily weaknesses and begged to be readmitted. He returned to work but only for a few days. He seemed helpless at home and continued to complain until he was finally admitted to the University Hospital at Ann Arbor on an order of the court. He is still a patient at that hospital.

That the psychopathic tendencies exhibited before his illness have not disappeared with convalescence is evident from the following interesting katamnesis. While awaiting the order from the court for his admission as a public patient to the University Hospital, it was necessary to detain him in the Psychopathic Ward at the Detroit City Receiving Hospital. By some chance he saw his chart or heard notes read from it and caught up the words "psychopathic inferiority" relative to his own case. Under date of Sept. 6, 1920, he wrote to Dr. Mc. a detailed letter, in the form of "A Magazine Devoted to the Interests of Patients, Nurses and Doctors. For Precautionary Consid-


The Inferior
of
Psychopath
A magazine devoted to the interests of Patients, nurses and Doctors. For Precautionery considerations Doctors come last
M.M WARD U HOSPITAL
GIVE A DOG A BAD NAME AND DROWN HIM
Ann Arbor Michigan
August 1920
PRINTED AND PUBLISHED BY

Cover page of "magazine" written by the patient in Case 4. This cover was designed and drawn by the patient after recovery.

erations Doctors Come Last." It was painstakingly printed by hand in pen and ink script with an illustrated cover and three pages of text. An exact reproduction of the cover is shown on page 158. A few excerpts from the "magazine" may be of interest. Evidently he no longer thanks Dr. Mc. for giving him Dr. J.

"Dear Dr. Mc.:

"Now, that I have several painless hours every day, and can sit at the writing table like a man, I wish to let you know that my wife gave birth to a baby girl.

"She is now nine weeks old . . . very beautiful and is an exact copy of me (there is no discrepancy in it, for I was nice looking when I was a baby) yours sincerely, H— H—, the individually psychopathically inferior following encephalitis lethargica.

"No, Doctor, I did not give myself deliberately such a name, it is a bull conceived in an unfortunate hour by Dr. J—. With this name, he sent me for a few days to the Receiving Hospital when they locked me up with insane criminals. When I asked the nurse . . . for a pillow . . . she told me to cut it out, and pointing to the history of my case, . . . she said that I am insane . . . and simulating pain because I want everybody to serve me . . . although she did not say it, but what she meant was probably that I am an egomaniac or afflicted with mania grandiosa. . . . Since I awoke from that long sleep, I have not spoken one word which would justify such a diagnosis. I cannot have anything against the deductions of the science of psychiatry, and I would not worry so much and it would not be so painful if some one else did it, but Dr. J— who has done for me so much, who has literally wrested me from the jaws of death, of him I did not expect this. And then I don't understand what it means, 'Inferior psychopath;' this implies the existence of 'superior psychopaths.' What do they look like?

"I know I was irrational during the first period of my illness; I don't know what the future holds for me; but at present am Sane. Or is it the fact that the cause of the pain is in the brain that made him call me that name? then why inferior? and would not 'Pathologic brain' or some other term do?"

This letter apparently indicates that the patient's condition is approximately what it was before his illness: he is an odd type with neurotic traits thrown into stronger relief by the physical after-effects of his earlier toxic state.

Summary of the Mental Picture of Case 4:

1. Russian Jew, fairly well educated, of distinct neurotic type.
2. Fears of sexual impotency before and after marriage.
3. Toxic character of illness masked in its early stages by what appeared to be purely hysterical symptoms, including anesthesias, analgesias, easy suggestibility with successful hypnosis and other symptoms, as well as aphonia.
4. After the toxic character of the illness was manifest there appeared symptoms of irritation, mental unclearness and hallucinations; ideas of influence, delusions, disorientation, masturbatory tendencies, picking at the bed clothes and other symptoms.
5. Still later appeared the so-called lethargic, or substuporous stage from which the patient could be aroused sufficiently to answer questions.
6. Finally the amnesia, partially questionable, and the tendency to defense mechanisms seen in his letters. The so-called "magazine" illustrates this well, and even suggests hypomanic and dementia praecox features.

In reviewing the four cases just reported there seem to be two outstanding features of the disease, one not limited to the disease entity before us, and the other possibly generally characteristic of the disorder, although not strictly limited to it. Without attempting to relate these features to the pathology of encephalitis, and looking at the subject from a clinical point of view, these two features seem to be: one, the symptoms of the irritative stage, and the other the symptoms of the so-called lethargic, substuporous or low grade stupor stage. That of the irritative stage is less characteristic and is a feature so frequently found in what is popularly styled "nervousness," "maniacal states," or "delirium" (dependent on the degree of irritation) of the various toxic psychoses. The most important irritative symptoms in the four cases just reported may be recapitulated in the order in which they present themselves:

Case 1: During illness there were marked emotional instability, unclearness or mental confusion, temporary loss of speech and amnesia for the delirium. After recovery emotional instability without deterioration appeared.

Cases 2: Terrifying dreams, insomnia, distractibility, mild kinesthetic hallucinations, failing powers of concentration, a tendency for odd numbers and letters to fix themselves in his consciousness, and a mild degree of euphoria were present. He manipulated the genitals (this may be regarded as purely a physical, rather than a psychic irritation). After recovery there were no irritative symptoms. Case 3: The patient was in a dream-state or delirium and made grunting noises like those of an animal. His eyes were closed (possibly photo sensitivity) and he gave evidence of unclearness and disorientation, an incoherent stream of thought, and delusions of a mild persecutory character.

As for the substuporous stage, all of the patients except the patient in Case 1 showed some degree of lethargy or "emotional paralysis." [1a] All three patients could be aroused from this condition, with the exception of the patient in Case 4 during his terminal coma; all three showed some degree of so-called parkinsonian or ironed-out facies, and all had an amnesia for both the irritative and lethargic periods, less marked for the lethargic period as this projected itself in two of the cases, in milder form in the period of convalescence or recovery.

The patient in Case 2 four months after convalescence temporarily dozed off into a brief drowsiness during his work.

Two other interesting psychiatric elements present themselves in all four cases. 1. The patient either had a tainted heredity or had shown marked psychoneurotic tendencies before his illness. In Case 1 there was insanity in the ancestry and the patient was being reared in the atmosphere of divorce and other family difficulties. The patient in Case 2 was of a high-strung disposition and was temperamental.

[1a] Wechsler, S.: The Symptoms of Epidemic Encephalitis Structurally and Functionally Considered, New York M. J. **112**:175 (Aug. 7) 1920.

In Case 3 there was a history of petit mal epilepsy, with hysterical symptoms, and the patient in Case 4 was a neurotic of the nth degree with sexual obsessions, suggestible to the point of hypnotism and a more or less helpless type of individual.

2. The three patients who recovered showed some residuals of the acute illness long after convalescence set in. One was emotionally unstable, another had brief periods of drowsiness and the previous tendencies of the fourth were highly accentuated. He imagined that he was the victim of ill-directed medical classification, and spent his time in writing letters not unlike those of a hypomaniac. He is rapidly becoming institutionalized and it is questionable whether he will ever again properly maintain himself and his family.

This last point, as far as the variable symptoms of the disease are concerned, is probably the most important. In short, the mental picture of the irritative stage as well as that of the post-convalescent stage, with residuals, is determined by the individuality of each patient. Consequently, no two cases are alike from the psychiatric point of view, particularly when analyzed relative to the irritative symptoms. The situation here is much the same as it is in general paralysis, dementia praecox and the other psychoses. Each patient has his own background on which the changing features of his acute illness are thrown and thus make the psychic element unique.

REVIEW OF LITERATURE

Although epidemic encephalitis, as such, has been accorded much attention in the literature, particularly during the past year, yet little, beyond casual mention in the better reviews and the occasional report of isolated cases, has been contributed on the more essentially psychiatric phase of this disorder, notwithstanding the undoubted importance of such an analysis.

On the peculiar lethargy or apathy so characteristic of the disease and responsible for its original designation, lethargic encephalitis, by Economo,[2] in 1917, much comment has been made. This state has been variously characterized by different observers as cerebral torpor (Cruchet[3]), or somnolence (Netter and Sainton[4]), or stupor with normal rationality (Tilney and Howe[5]), and seems to have varied, in degree, from mere listlessness or mental inertia, to frank coma, with catatonic features. The condition, on critical analysis, seems not to have been coma or even true stupor as it appears to have been generally possible, on proper stimulation, to recall the patient to objective consciousness for brief periods, during which, beyond in some cases a certain retardation or lengthened reaction time, there was but little evidence of mental disturbance or impairment; although, as suggested by Burr,[6] it is questionable whether in the absence of external stimuli there was actually any mediation of mental processes or any emotional tone. Wechsler [1a] suggests resemblance to an emotional paralysis, and Alexander and Allen [7] include reference to it as an emotional stupor as does also Kennedy,[8] who has characterized such cases as intellectually keen but emotionally stupid. The term pseudostupor, as suggested by Burr,[6] seems well in point although it is questionable whether some such designation as substupor might not be more suitable.

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[2] Economo: Verein f. Psychiat. u. Neurol. in Wien., April 17, 1917.

[3] Cruchet, R.: Bordelaise Conception of Encephalitis Lethargica, New York M. J. **112**:173 (Aug. 7) 1920.

[4] Netter, A., and Sainton: L'encephalite lethargique, Presse méd. **26**:487 (Sept. 23) 1918.

[5] Tilney, F., and Howe, H. S.: Epidemic Encephalitis, New York, Paul B. Hoeber, 1920, pp. 85, 20, 60, 50, 96.

Wechsler [1a] suggests that conceivably this state may have a thalamic basis and mentions the rather doubtful possibility of basic pituitary or pineal influence. On the whole, however, as noted by Burr [6] and Tilney and Howe,[5] the condition seems more probably but a manifestation of the generalizing nature of the condition, as is borne out also on consideration of its basic pathology (Hammes and McKinley [9]). Russell [10] thinks that the somnolence depends entirely on a lesion in the posterior part of the pons near the aqueduct of Sylvius, thus interfering with the flow of the cerebral fluid in the cerebral hemisphere to the spinal canal and resulting in an acute hydrocephalus.

The so-called catatonic features—catalepsy, flexibilitas cerea, parkinsonian facies and the other features—have been reported by most observers, notably by Bond,[11] Hammes and McKinley,[9] Wilson,[12] Hall,[13] Kennedy,[8] Batten and Still,[14] Tilney and Riley,[15] Tilney and Howe,[5] and Bassoe.[16] The exact mechanism concerned in the production of the muscular hypertonus constituting this feature has apparently not yet been definitely determined. Thus Tilney and Howe[5] seem to feel that it is due essentially to extrapalliospinal involvement, while Wechsler[1a] questions whether this sign can be explained wholly on the basis of extrapyramidal involvement and mentions the possibility of a true cerebral condition, an interference with cerebral functioning, with a resultant setting free of uninhibited unconscious activity, as found in dissociative epilepsy.

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[6] Burr, C. W.: Case Report, Trans. Philadelphia Neurol. Soc., Feb. 27, 1920; Arch. Neurol. Psychiat. **4**:105 (July) 1920.

[7] Alexander, M. E., and Allen, H. E.: Lethargic Encephalitis, Arch. Neurol. & Psychiat. **3**:485 (May) 1920.

[8] Kennedy, F.: Epidemic Encephalitis with Stupor, Med. Rec. **95**:631 (April 19) 1918.

[9] Hammes, E. M., and McKinley, J. C.: Lethargic Encephalitis, Arch. Int. Med. **26**:60 (July) 1920.

[10] Russell, C. K.: Study of Epidemic Encephalitis Based on Seventeen Cases with Two Necropsies, Canadian M. J. **10**:696 (Aug.) 1920.

[11] Bond, E. D.: Epidemic Encephalitis and Katatonic Symptoms, Am. J. Insan. **76**:281 (Jan.) 1920.

[12] Wilson, S. A. K.: Epidemic Encephalitis, Lancet **2**:7 (July 6) 1918.

[13] Hall, A. J.: Epidemic Encephalitis, Brit. M. J. **2**:461 (Oct. 26) 1918.

[14] Batten, F. E., and Still, G. F.: Epidemic Stupor in Children, Lancet **1**:636 (May 4) 1918.

[15] Tilney, F., and Riley, H. A.: Epidemic Encephalitis, Neurol. Bull. **2**:106 (March) 1919.

The possibility of the existence of a definite or characteristic psychosis is deprecated by Wechsler, who feels that findings suggestive of such a state are but manifestations of an underlying infection or toxic delirium syndrome. Tilney and Howe, in the inclusion of epileptomaniac and acute psychotic types in their clinical classification, seem to bear out this point of view, as do also observations by Wilson.[12] Cases studied by Hammes and McKinley[9] showing delusions, hallucinations and temporary disorientation, and by Cruchet,[3] showing disorientation and paraphasic features, may be construed on the same basis.

On the other hand, Climenko[17] reports a case of definite Korsakow psychosis and Leiner,[18] Hammes and McKinley, and Wilson remark the occurrence of Korsakow-like syndromes.

Leiner mentions two apparently frank cases of manic depressive psychosis, one of the cyclothymic type. Climenko also indicates this possibility, as an end point to the characteristic euphoria which he frequently found to precede the acute phase of the disease. This euphoria, he finds, shows a definite tendency to become a hypomania, as the disease progresses which, in turn, may become a truly manic condition. He further indicates the possibility of the development, in some subjects, of an excited-depression as opposed to a hypomania. Euphoria has been noted in addition, by Tilney and Howe,[5] Schwartz,[19] and House.[20]

Wilson[2] reports a case in which the patient developed a typical witzelsucht.

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[16] Bassoe, P.: Epidemic Encephalitis (Nonna), J. A. M. A. **72**:871 (April 5) 1919.

[17] Climenko, H.: Encephalitis Lethargica, New York M. J. **111**:531 (March 27) 1920.

[18] Leiner, J. H.: Encephalitis Lethargica, New York M. J. **111**:179 (March 27) 1920.

[19] Schwartz, S.: Encephalitis Lethargica, New York M. J. **112**:6 (Aug. 7) 1920.

[20] House, W.: Epidemic (Lethargic) Encephalitis, J. A. M. A. **74**:372 (Feb. 7) 1920.

The available literature apparently indicates that psychiatrically considered the clinical picture in epidemic encephalitis is still somewhat indefinite. Nevertheless, there appears to have been definitely determined the characteristic initial pseudostupor or substupor (which may be preceded by a euphoric phase) distinguished by marked depression of the emotional field, often with catatonic features. In addition, as a function of the generalizing character of the infection and the reaction to it, there is evidence strongly suggestive of infection, toxic delirium or toxicorganic psychosis, which in some cases appears to simulate strikingly certain other common, noninfectious psychoses.

In the latter regard, although no specific mention has been made, there is no reason to suppose that a latent psychosis may not be precipitated as a result of the infection, as has been determined in the case of infectious processes, notably epidemic influenza.

CONCLUSIONS

1. The psychiatric phase of epidemic encephalitis has not received the same study and attention as has the neurologic aspect.

2. Looking at the disease from the psychiatric aspect, there seem to be two stages—the irritative stage in which the mental picture is not unlike that of other noninfectious psychoses, and the period of "low grade" stupor, lethargy or, better still, the substuporous period. The former may be marked by euphoria, hypomania, depression, hallucinations, paranoid stages, or even the Korsakoff syndrome, and frequently there are features that simulate those of severe hysterical excitement. The latter is rather an extreme apathy from which the patient may be roused; there is, as it were, a paralysis of the emotional field, frequently accompanied by masklike or parkinsonian facies. This apathy or stupor in some cases amounts almost to a catalepsy, but it should be remembered that it is possible, except in the terminal stage, to rouse the patient.

3. The keynote, if we may use this figure, is that the mental condition is variable, this condition being an infectious-toxic one, the whole dominated at some time by an apathy or substupor in which the personality is fairly well preserved but blurred by torpor.

4. The authors' four cases bring out these interesting features of the disorder:

(*a*) The symptoms during the irritative stage reflect the patient's make-up previous to his infection.

(*b*) There is an amnesia for the irritative period. In these two respects, the disease is characteristic of a toxic delirium.

(*c*) Each patient experienced the substuporous stage except the first, a child of 9. This patient was not seen until some time after the onset.

(*d*) There are mental residuals in all patients that recovered, either similar to those noticed in the person before his illness, or else highly aggravated. These may gradually pass away, or become progressively more pronounced. The last result is true of Cases 1 and 4.

5. It may not be dogmatically maintained that the disease can be diagnosed from the psychiatric picture; the substuporous stage, however, is strongly suggestive of the disorder, and when found in conjunction with spasmodic twitchings, lost knee reflexes, bladder disturbances, cranial nerve palsies and other symptoms is almost if not truly diagnostic.[21]

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[21] Since the manuscript for this paper was submitted, two articles have appeared: one, in the November issue of the ARCHIVES OF NEUROLOGY AND PSYCHIATRY, by L. Archambault. He lays emphasis on the generalizing nature of the infection and speaks of one case in which there was a paresis-like picture. The other is by I. Abrahamson: "Mental Disturbances in Lethargic Encephalitis," J. Nerv. & Ment. Dis. **7**:193 (Sept.) 1920. He also speaks of the generalizing nature of the intoxication and of the Korsakoff-like pictures in the disease.